

Telecommunication Markets in the Nordic and Baltic Countries 2016



Communications Regulatory Authority
of the Republic of Lithuania



PUBLIC
UTILITIES
COMMISSION



TEHNILISE JÄRELEVALVE AMET



Danish Energy
Agency



Nasjonal
kommunikasjons-
myndighet



POST AND TELECOM
ADMINISTRATION
IN ICELAND

About the database

- The database was established in 2007 by the Nordic countries
 - » The Baltic States are included since spring 2013
 - » A descriptive database
- Consists of a selected number of variables that are comparable between the Nordic and Baltic countries
- A dynamic database that will change as the telecom markets develop
- The figures are collected and validated by the Nordic-Baltic working group on statistics and definitions
- If not stated otherwise the source for all figures are the relevant national regulatory agencies and/or the national statistical agencies of each country
- Graphs include the years 2010 – 2016. Previous years are available in the database only. The variables are stated as of the end of the year. Graphs describing each country are displayed from the point of time (year) where these statistics are available. Due to this, length of time series may vary
- Graphs include amount of each variable for both private and business customers
- Graphs include per capita which means amount of each variable (both private and business) divided by population
- For more detailed information see the statistical portal:
 - » <http://statistik.pts.se/PTSnordic/NordicBaltic2016/>

Development of population, thousand of inhabitants

Population as of year end in the Nordic and Baltic countries. As most of the graphs in this presentation are scaled based on population in each country it should be noticed that this number is growing in some countries and decreasing in others. In this presentation only the years 2010 to 2016 are shown.

	2010	2011	2012	2013	2014	2015	2016	Change 2010 - 16
Denmark	5 561	5 581	5 603	5 627	5 660	5 707	5 749	3%
Estonia	1 323	1 321	1 294	1 320	1 313	1 312	1 316	-1%
Finland	5 376	5 401	5 427	5 451	5 472	5 487	5 503	2%
Iceland	318	320	322	326	329	333	338	6%
Latvia	2 075	2 045	2 024	2 002	1 986	1 969	1 953	-6%
Lithuania	3 245	3 199	2 979	2 944	2 922	2 889	2 849	-12%
Norway	4 920	4 986	5 051	5 109	5 166	5 214	5 257	7%
Sweden	9 416	9 483	9 552	9 645	9 747	9 851	9 995	6%
Total	32 234	32 336	32 252	32 424	32 595	32 762	32 960	2%



1. Mobile services

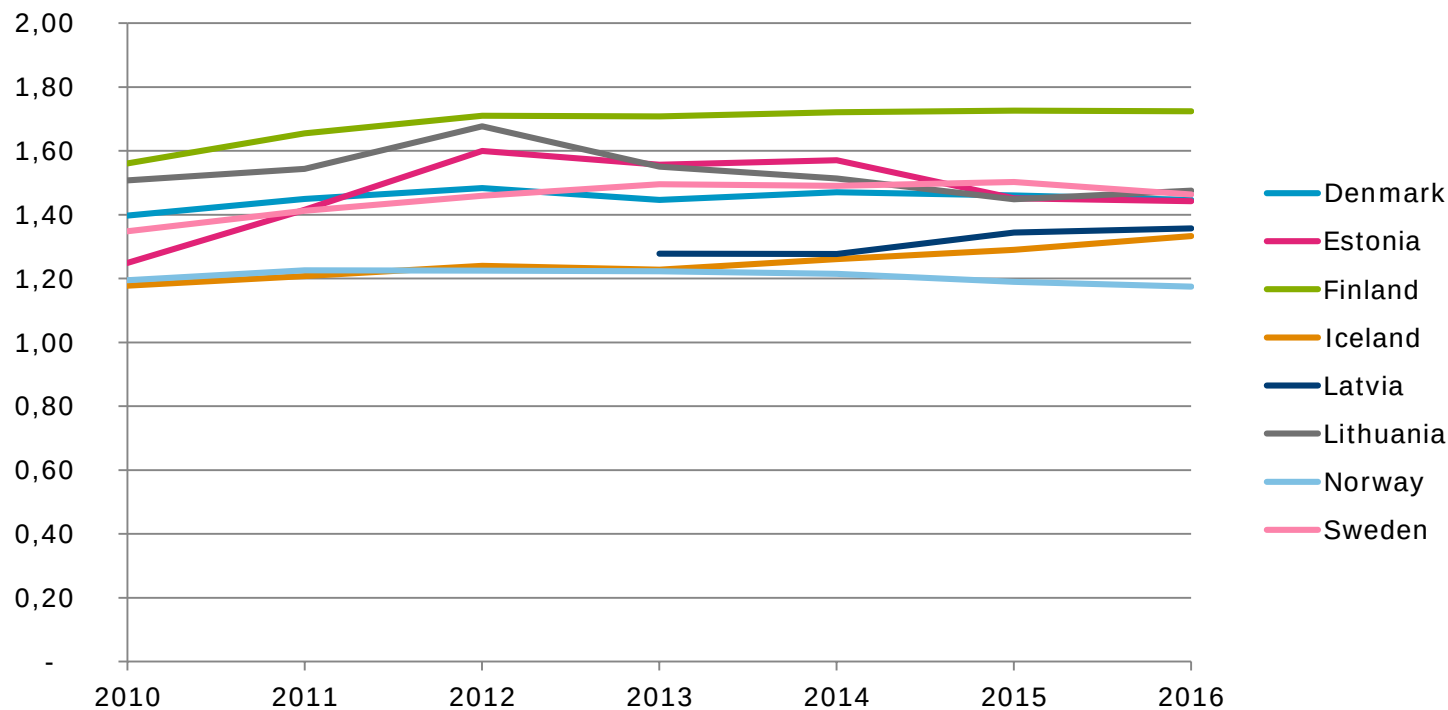
Development of mobile services

- Finland is the only country above 1,7 mobile subscriptions per capita whereas in the other countries the number varies between 1,2 and 1,5 subscriptions per capita. Despite some differences in the development it can be considered that the total number of mobile subscriptions is generally stagnating.
- The number of mobile call minutes is still growing in Sweden, Lithuania and Latvia and stagnating in the other countries. The highest usage per capita can be observed in Latvia. One reason for the growth is that an increasing share of subscriptions include unlimited amount of minutes for the monthly fee.
- SMS messaging is still more common in Lithuania than in other countries. The number of SMS messages sent per capita in a month in Lithuania was 150 whereas the number in other countries varied between 30 and 100. The use of SMS is increasing in Estonia whereas in other countries the usage is decreasing quite steadily.
- Data volumes in mobile networks are growing strongly in all countries. Finland is the only country with above 16 Gbyte per month and capita and continues to grow fast, 69 percent during 2016. One reason for this is that the operators are offering subscriptions without data caps. The other countries ranged between 2 to 7 Gbyte per month per capita.
- There are far more M2M subscriptions in Sweden than in any other country, almost 0,9 per capita. This is due to one particular company which provides most of them. The number of M2M subscriptions is clearly growing in all of the countries.

1.1 Mobile subscriptions per capita

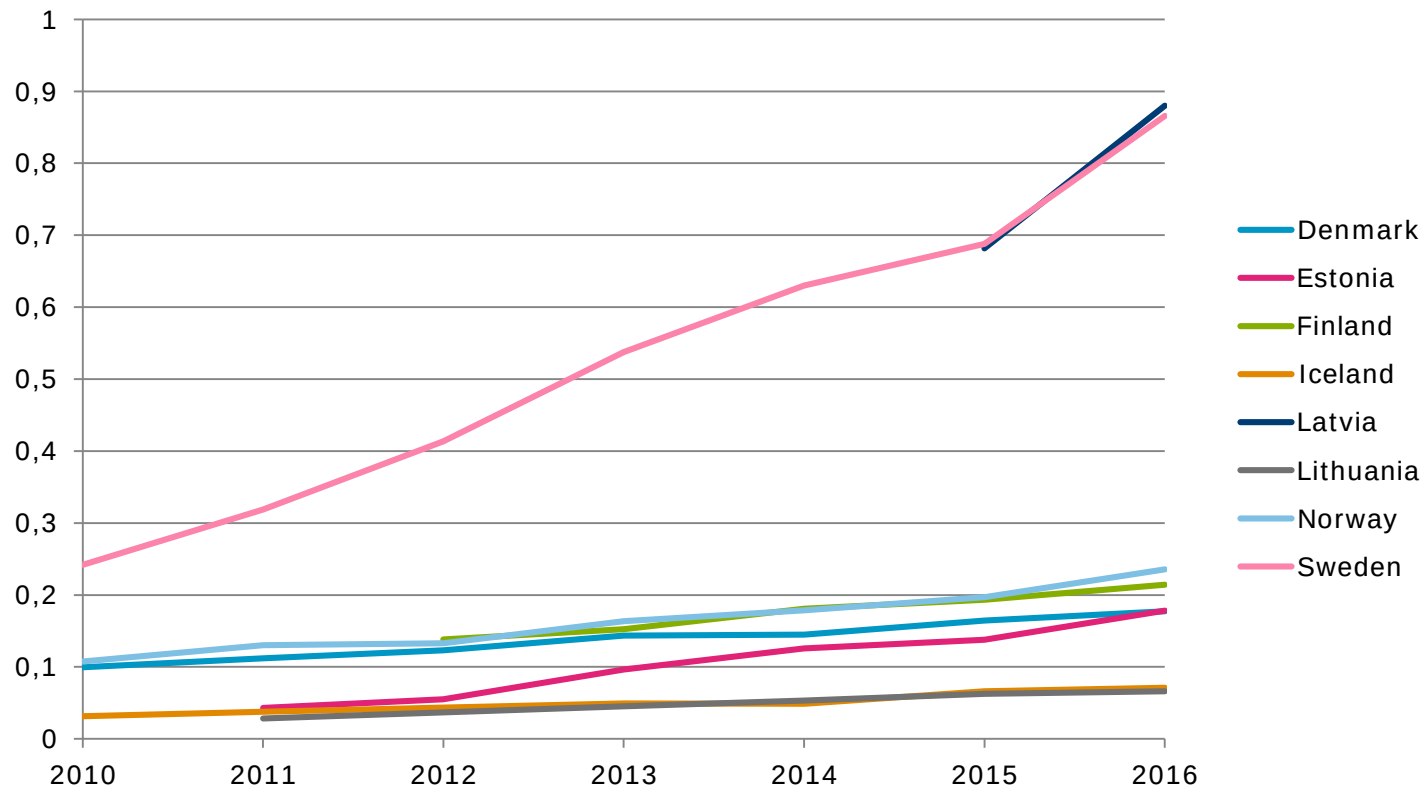
Number of mobile subscriptions (GSM/UMTS/LTE) for voice and mobile broadband divided by population.

Pre-paid subscriptions are also included. Prepaid subscriptions must have been active within the last 3 months of the period. M2M subscriptions are not included. In Finland the number of subscriptions (contracts) is not available, instead the number of sim cards is shown. The decrease for Lithuania and Estonia in 2013 is due to changes in definitions from the operators. The decrease for Denmark, Norway, Sweden and Lithuania in 2016 is due to drop in pre-paid cards.



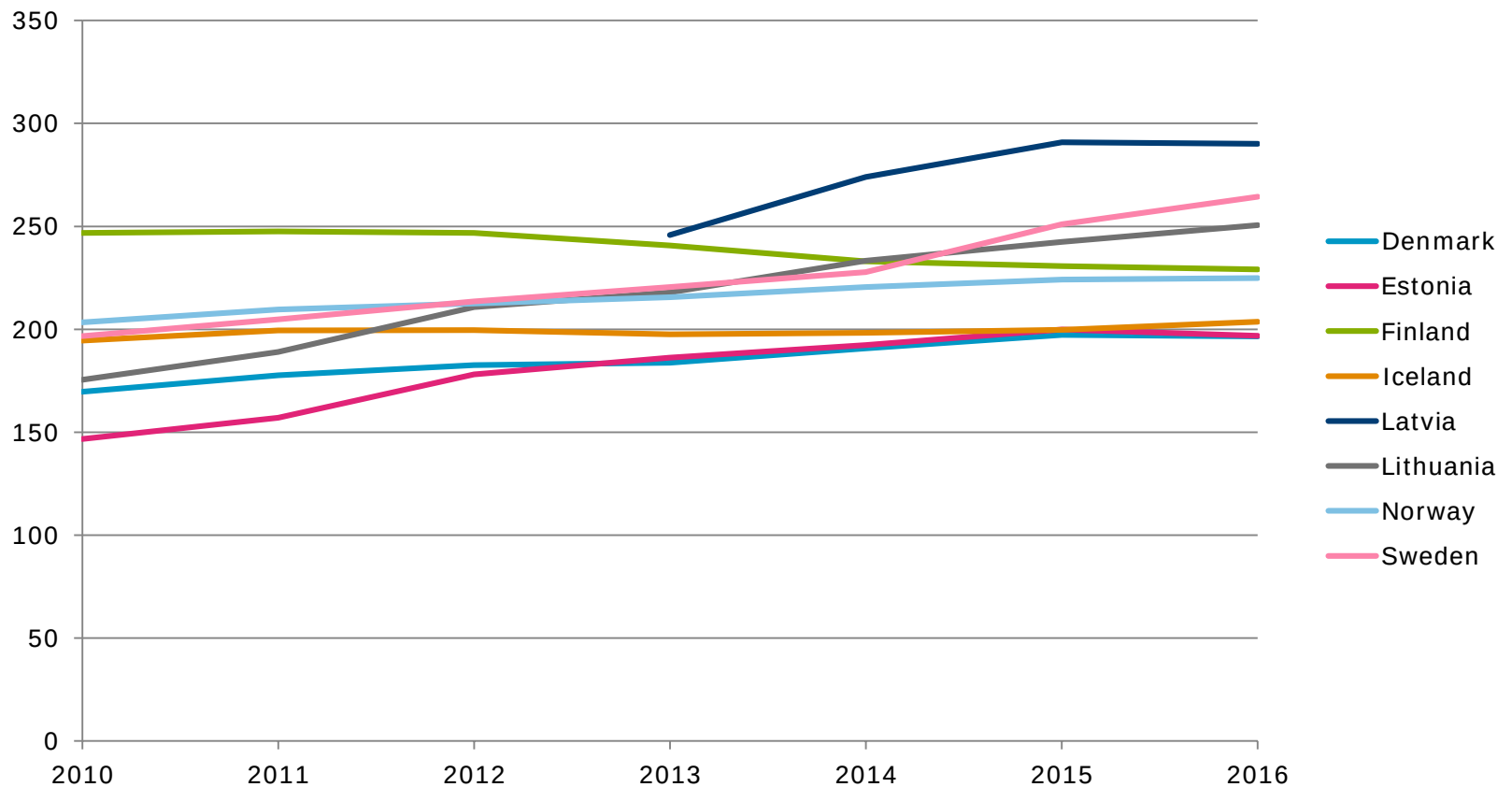
1.2 Mobile M2M subscriptions per capita

Includes subscriptions sold specifically to be used with or between machines in, for example, energy consumption meters, cars and surveillance cameras. M2M subscriptions include only subscriptions using mobile numbers. M2M subscriptions per capita is highest in Sweden and Latvia. The increase in Sweden is due to early market entry and foreign clients roaming abroad.



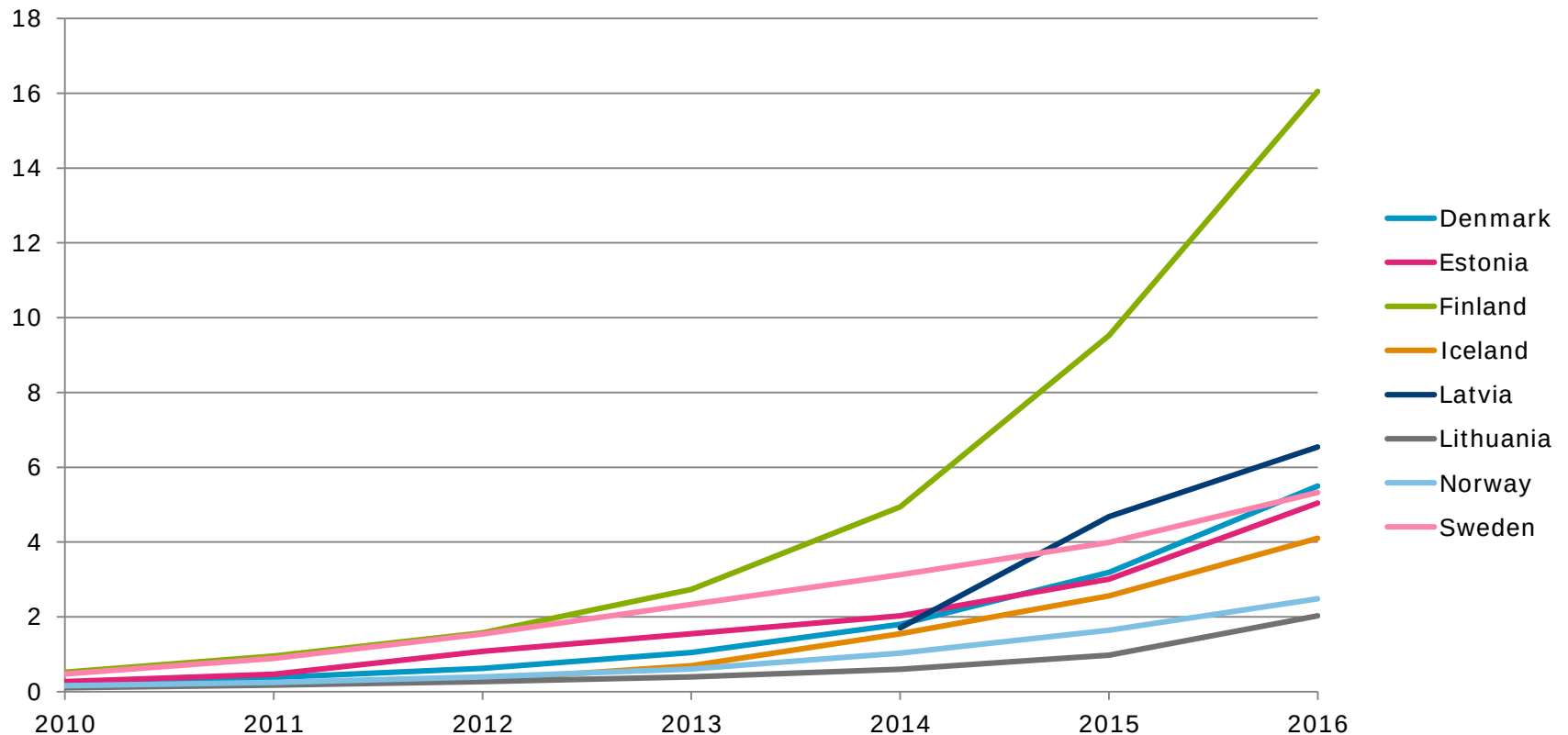
1.3 Mobile call minutes per capita in a month

Most of the mobile subscriptions have unlimited number of minutes or very large amount of minutes.

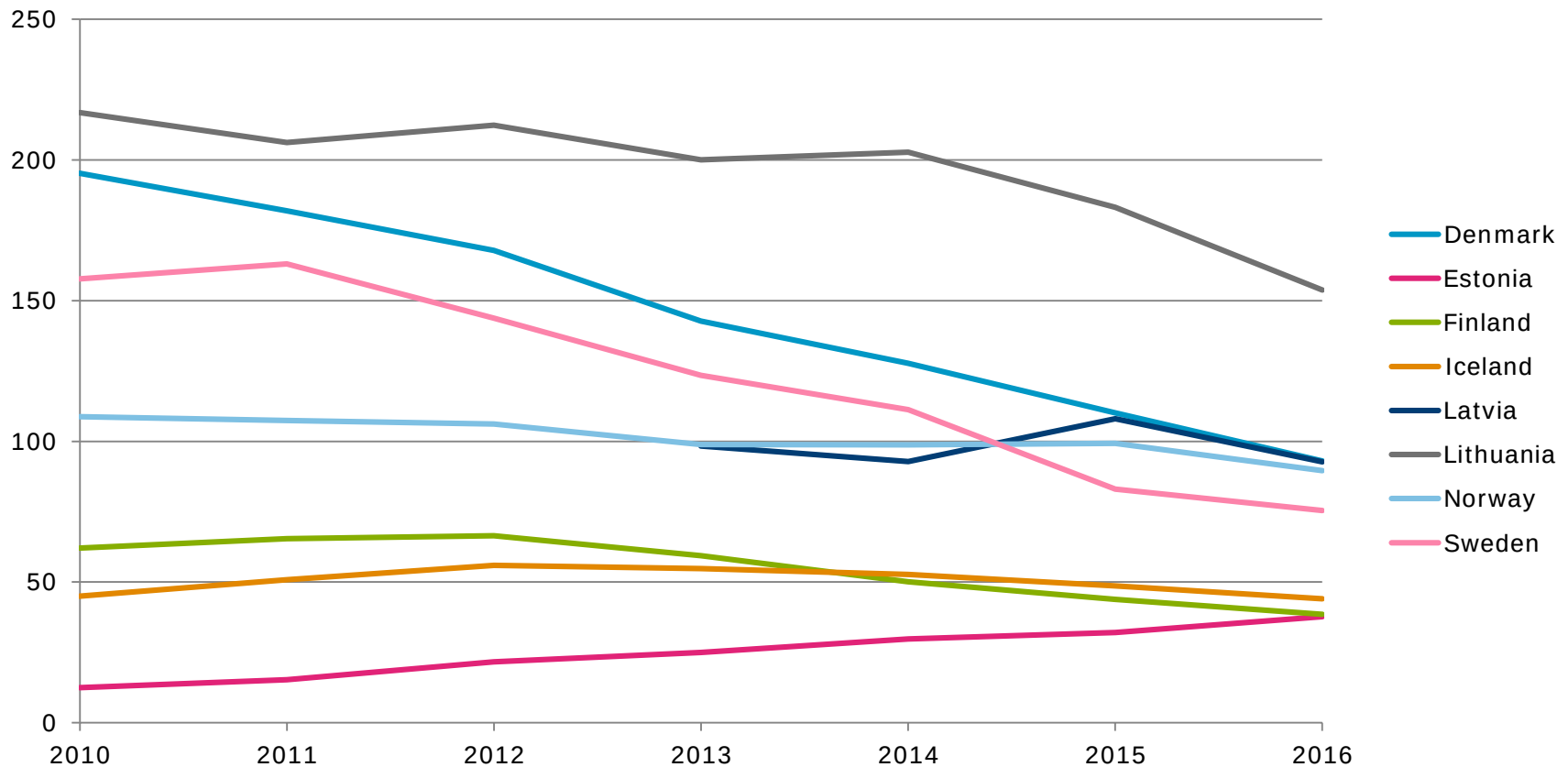


1.4 Gbytes of data transferred over mobile networks per capita in a month

Includes both up and download traffic. Data roaming abroad is not included.



1.5 Average number of SMS messages sent per capita in a month





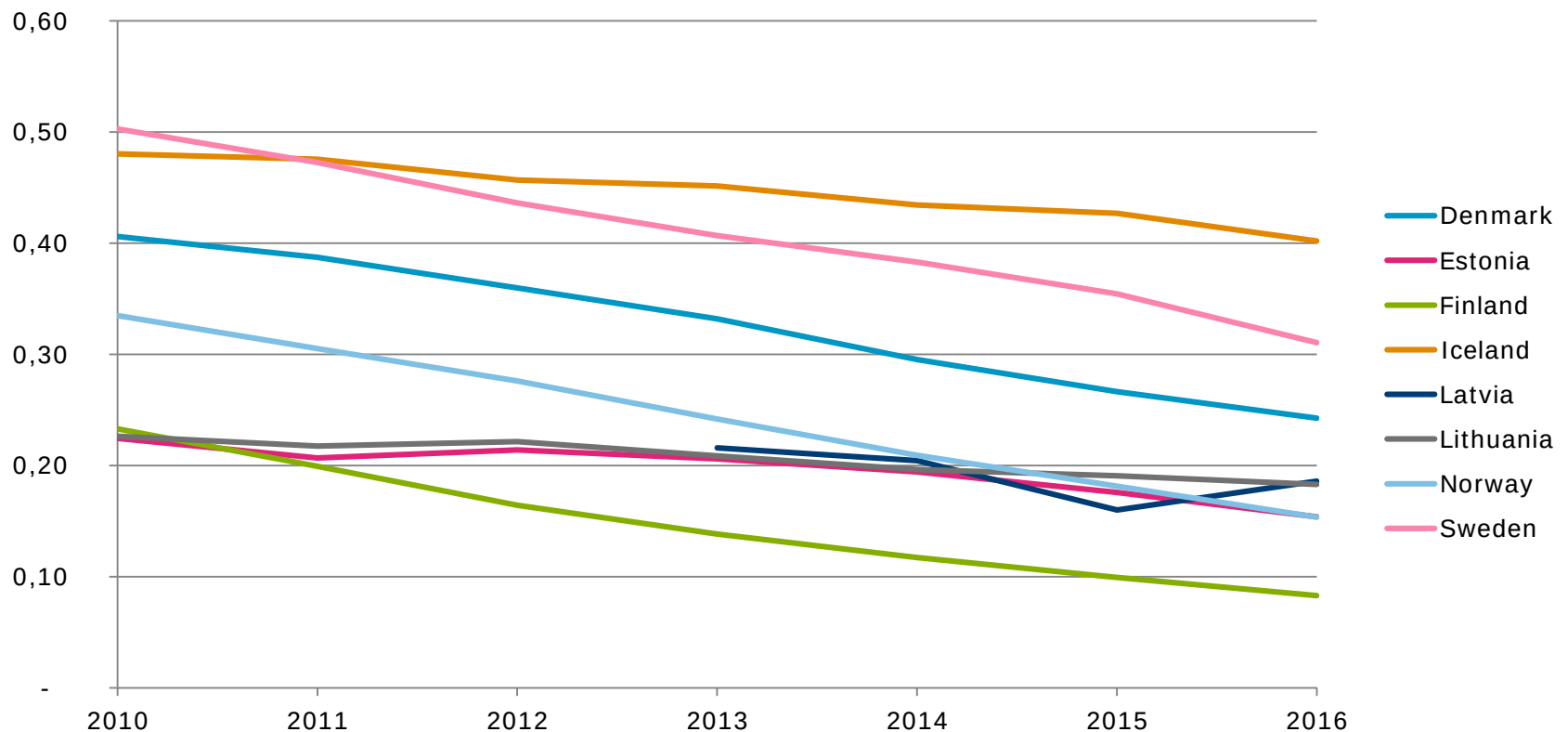
2. Fixed Call Services

Development of fixed call services

- The number of fixed telephony subscriptions per capita as well as the number of fixed call minutes is decreasing in all countries and there is no sign to indicate any change in the future. Though share of mobile minutes of all originated minutes vary between countries from 70 to 96 percent, the relative amount of fixed call minutes is steadily decreasing in every country.
- There are major differences between the countries in the number of IP telephony (managed VoIP) subscriptions per capita and the numbers are developing very differently as well. The Danish numbers includes only active subscriptions and both managed and unmanaged VoIP subscriptions.
- In Sweden, Denmark and Iceland there are well above 0,1 subscriptions per capita. In Iceland the number of subscriptions is still growing but in Denmark and Sweden it is now decreasing. In Estonia, Lithuania, and Finland the number of VoIP subscriptions per capita is below 0,04.
- Latvian and Icelandic incumbent fixed network operators plan to gradually switch the entire fixed network over to IP technology and switch off PSTN networks based on economic feasibility. IP telephony is often bundled with other services, e.g. fixed broadband and TV. In such cases the IP telephony part of the bundle may be inactive.

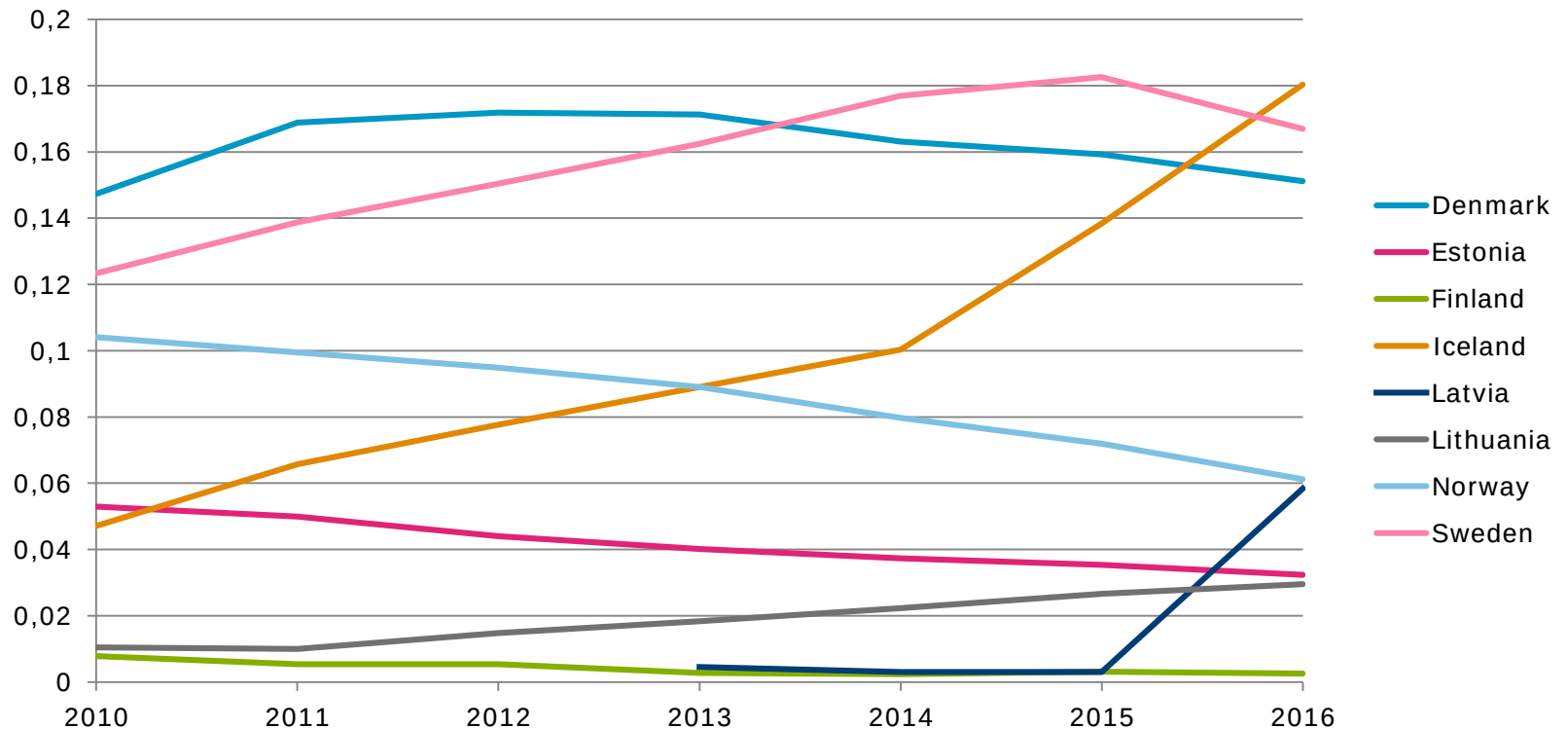
2.1 Fixed telephony subscriptions per capita

Includes PSTN, ISDN and IP telephony. The increase in Latvia due to a change of definition. Also Latvia is closing down the PSTN network.

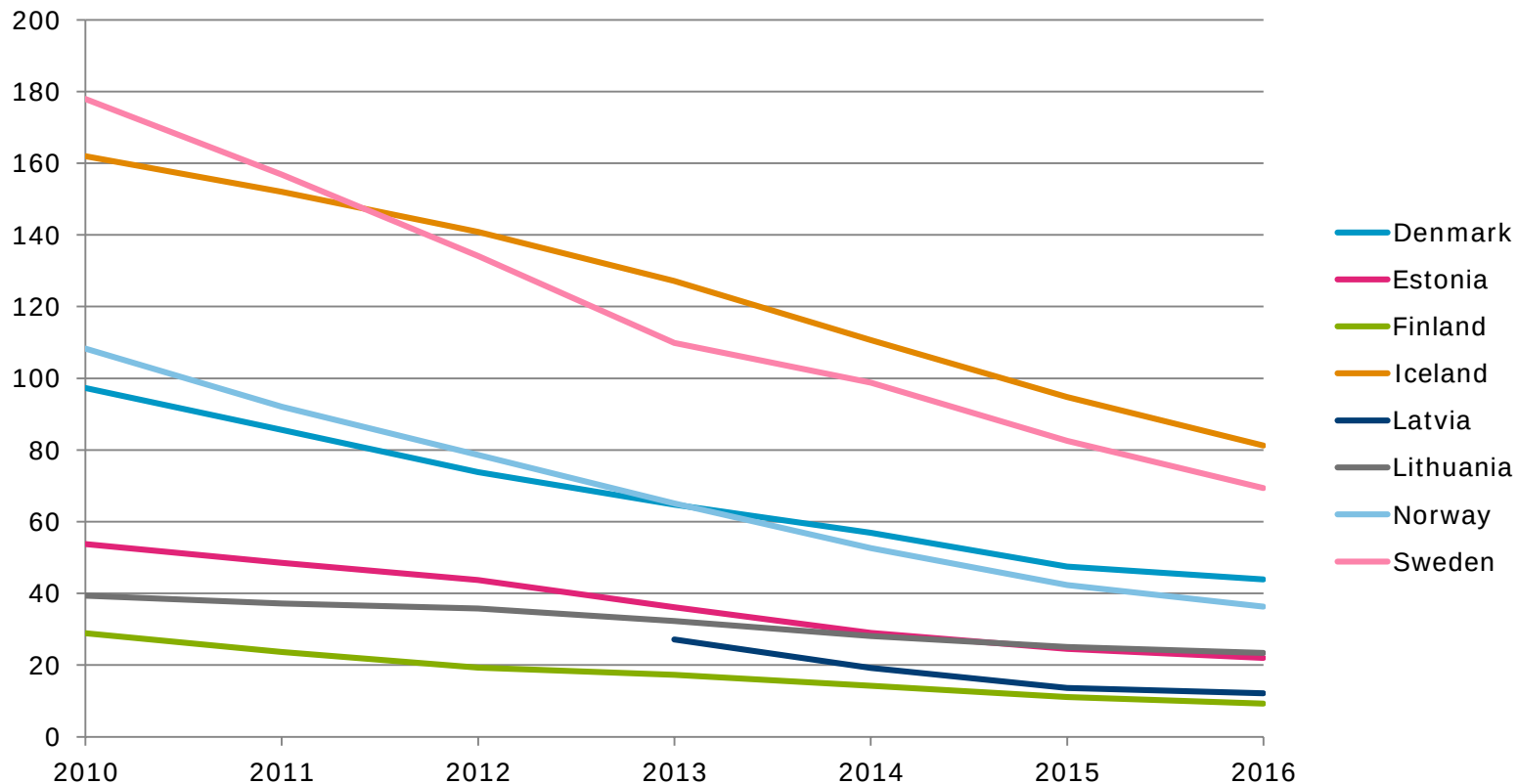


2.2 IP telephony subscriptions per capita

The increase in Iceland due to the closing down of the PSTN network, which is scheduled for 2020. Also Latvia is closing down the PSTN network. Danish figures include only active subscriptions.



2.3 Fixed call minutes per capita in a month



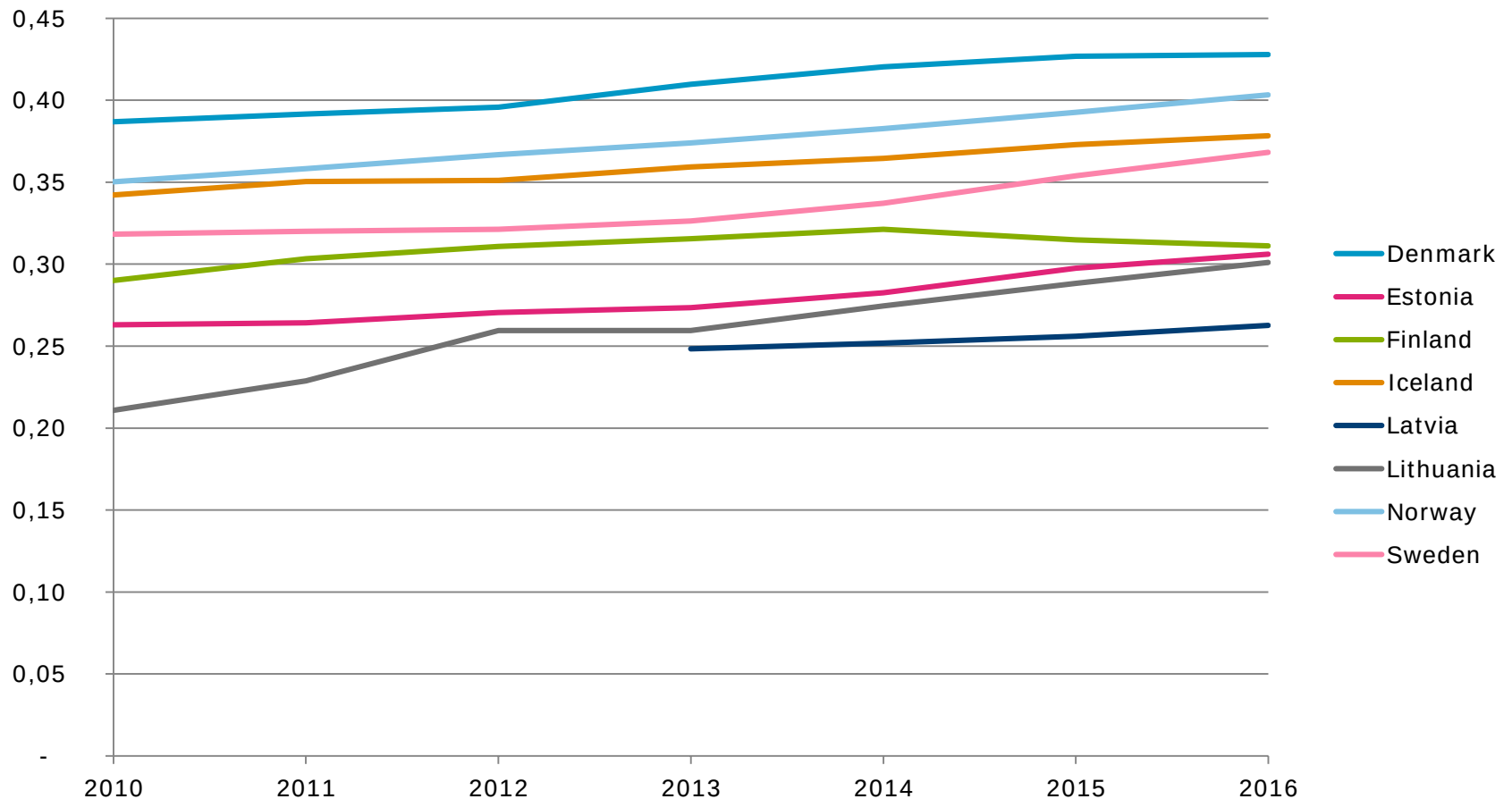


3. Broadband Services

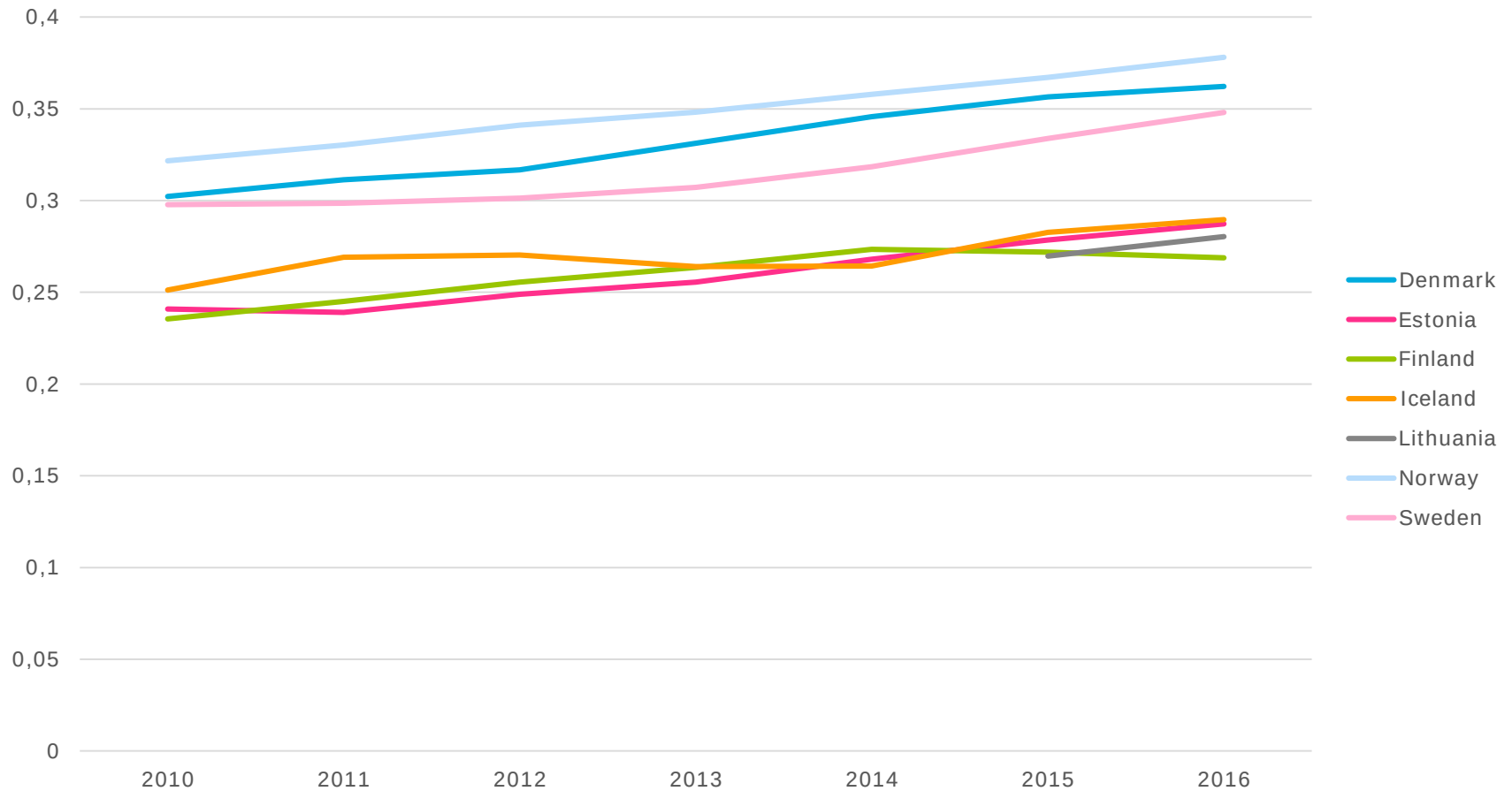
Broadband penetration

- Denmark still has most fixed broadband subscriptions per capita with a penetration of well over 40 percent. This share is over 25 percent in all of the countries. The number of fixed broadband subscriptions is still growing steadily in all countries except Finland. In Norway, Denmark and Sweden the share of private subscriptions are 35 percent and above.
- When comparing the penetration of dedicated mobile data subscriptions, Finland is well above the rest of the countries with 0,39 subscriptions per capita. Sweden and Denmark have the second highest penetration, around 0,22.
- When adding the dedicated mobile broadband subscriptions to fixed broadband subscriptions, Finland has the highest broadband penetration rate with 0,69 subscriptions per capita. The total broadband penetration rate is growing in other countries as well.

3.1 Fixed broadband subscriptions per capita

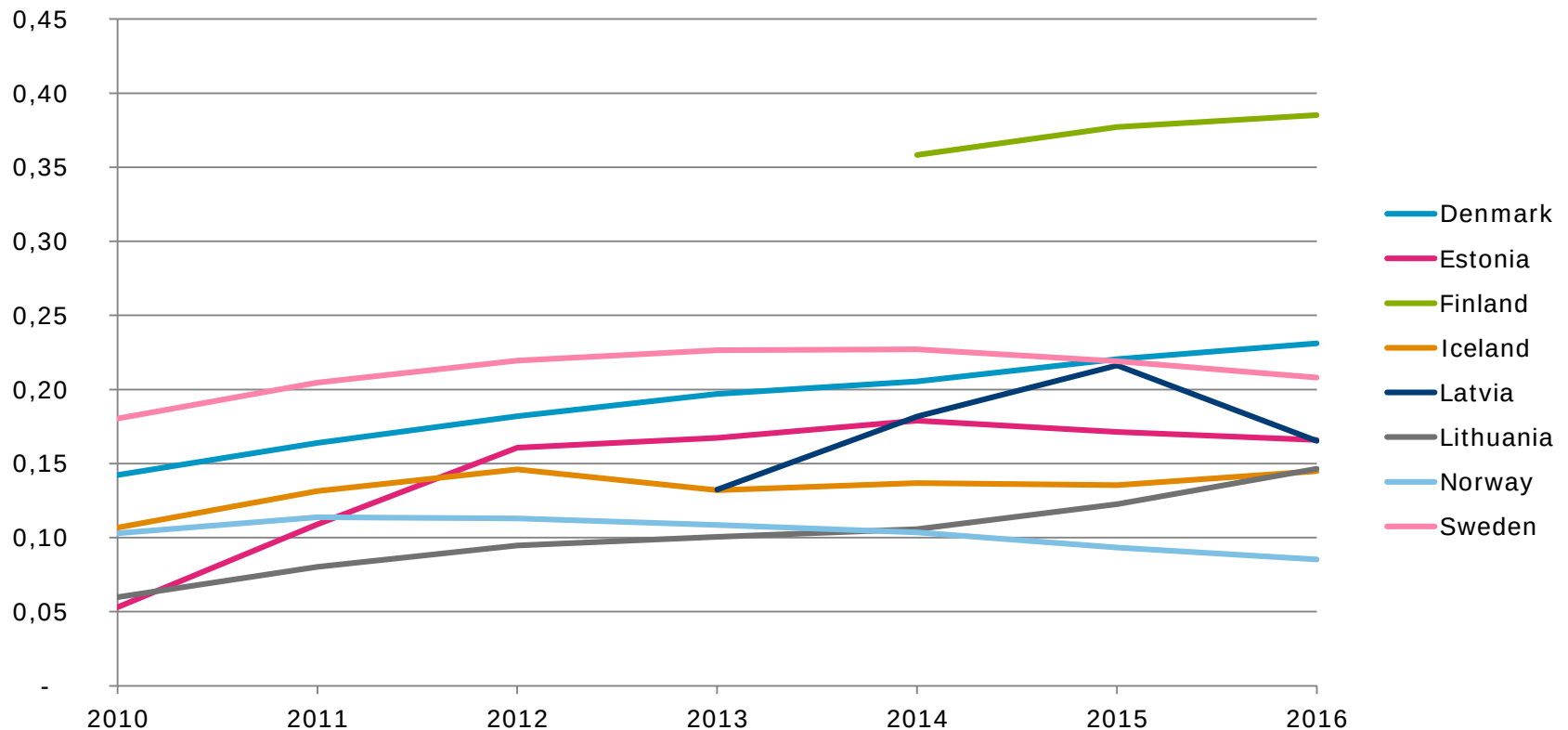


3.1b Private fixed broadband subscriptions per capita



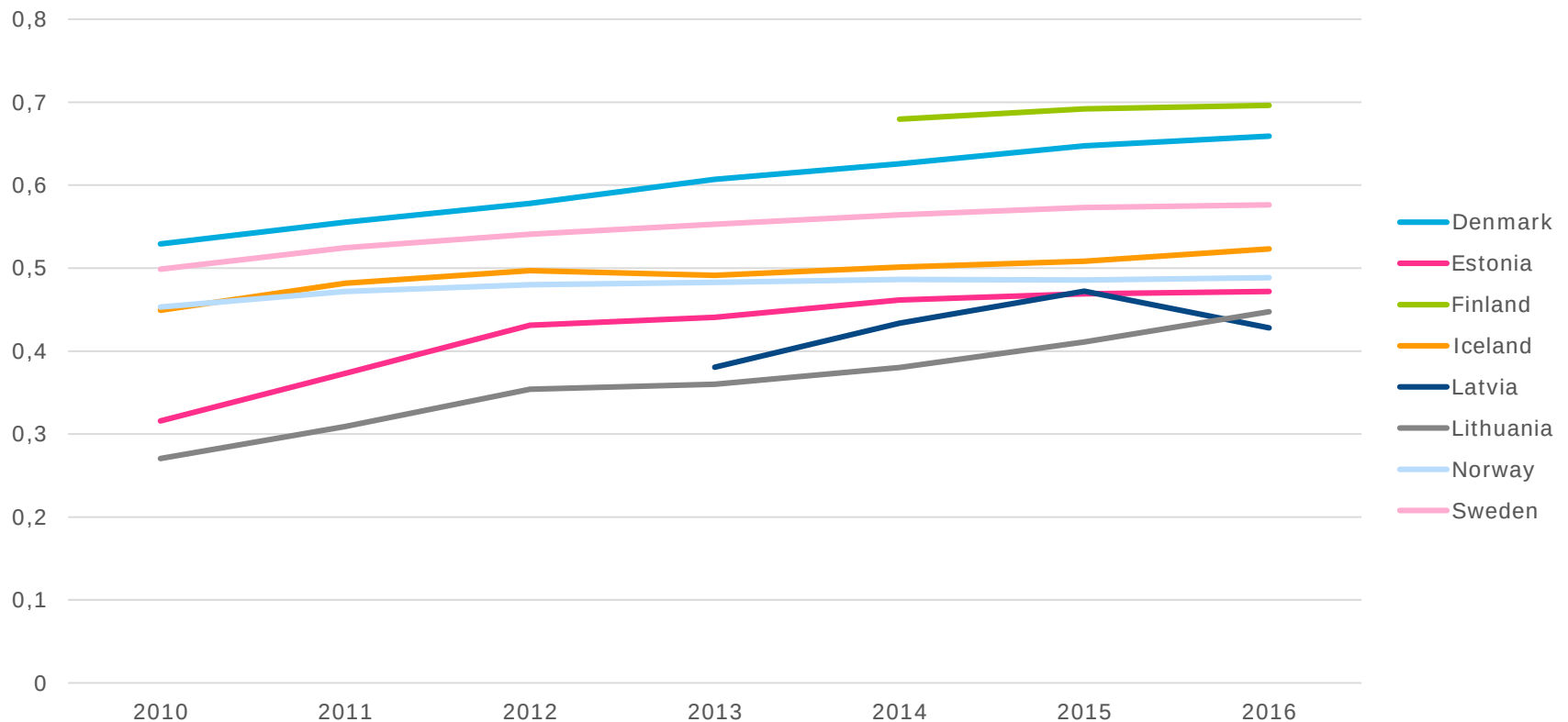
3.2 Number of dedicated mobile data subscriptions per capita

Subscriptions without call and SMS/MMS messaging services, used for example via dongles and tablets.



3.3 Total number of broadband subscriptions per capita

Includes all fixed broadband subscriptions and dedicated mobile data subscriptions. In Finland the number of subscriptions (contracts) is not available, instead the number of SIM cards is shown.

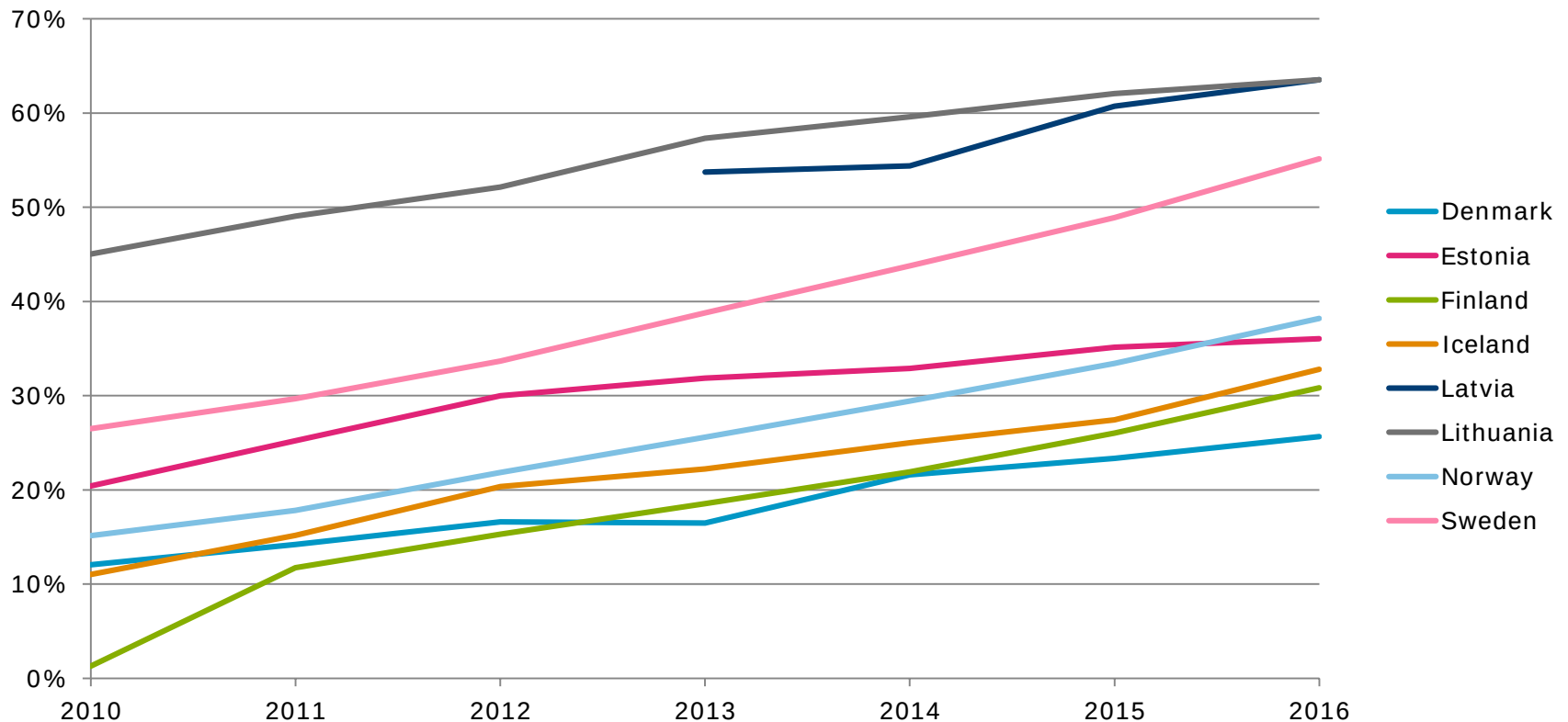


Development of faster broadband

- The share of fiber subscriptions of total fixed broadband subscriptions was highest in Lithuania and Latvia with over 60 percent in 2016, while Sweden in third place is closing in on the 55 percent mark.
- When it comes to broadband penetration for subscriptions with speeds of 100 Mbps or more downstream Sweden is well above the other countries. The penetration increased in all countries during 2016. The Swedish penetration rate for 100 Mbps reached 0,22 subscriptions per capita while the second highest penetration of 0,17 was found in Iceland. All Nordic and Baltic countries except Estonia had higher subscriptions per capita than the EU average.
- Iceland is the only country where most of the fixed broadband connections are still via DSL technology, after the share dropped below 50 percent in Finland in 2015. In Latvia and Lithuania most of the connections are fiber. In Sweden the share of fiber connections is also above the 50 percent mark.

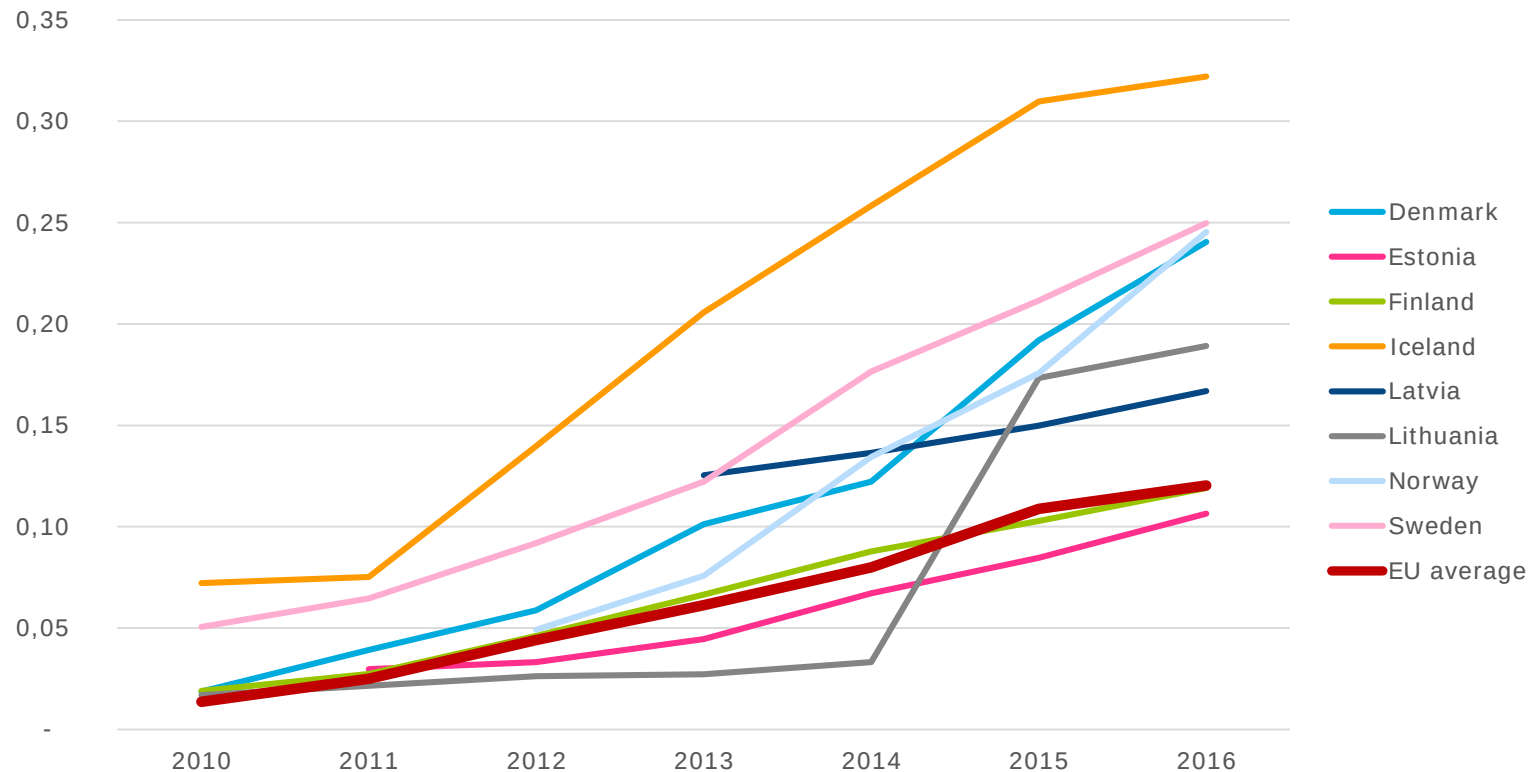
3.4 Share of fiber subscriptions of total fixed broadband subscriptions

Fiber includes fiber-LAN networks (LAN connected to fiber). Finland has a slightly different definition of fiber (FTTH- and Ethernet subscriptions).



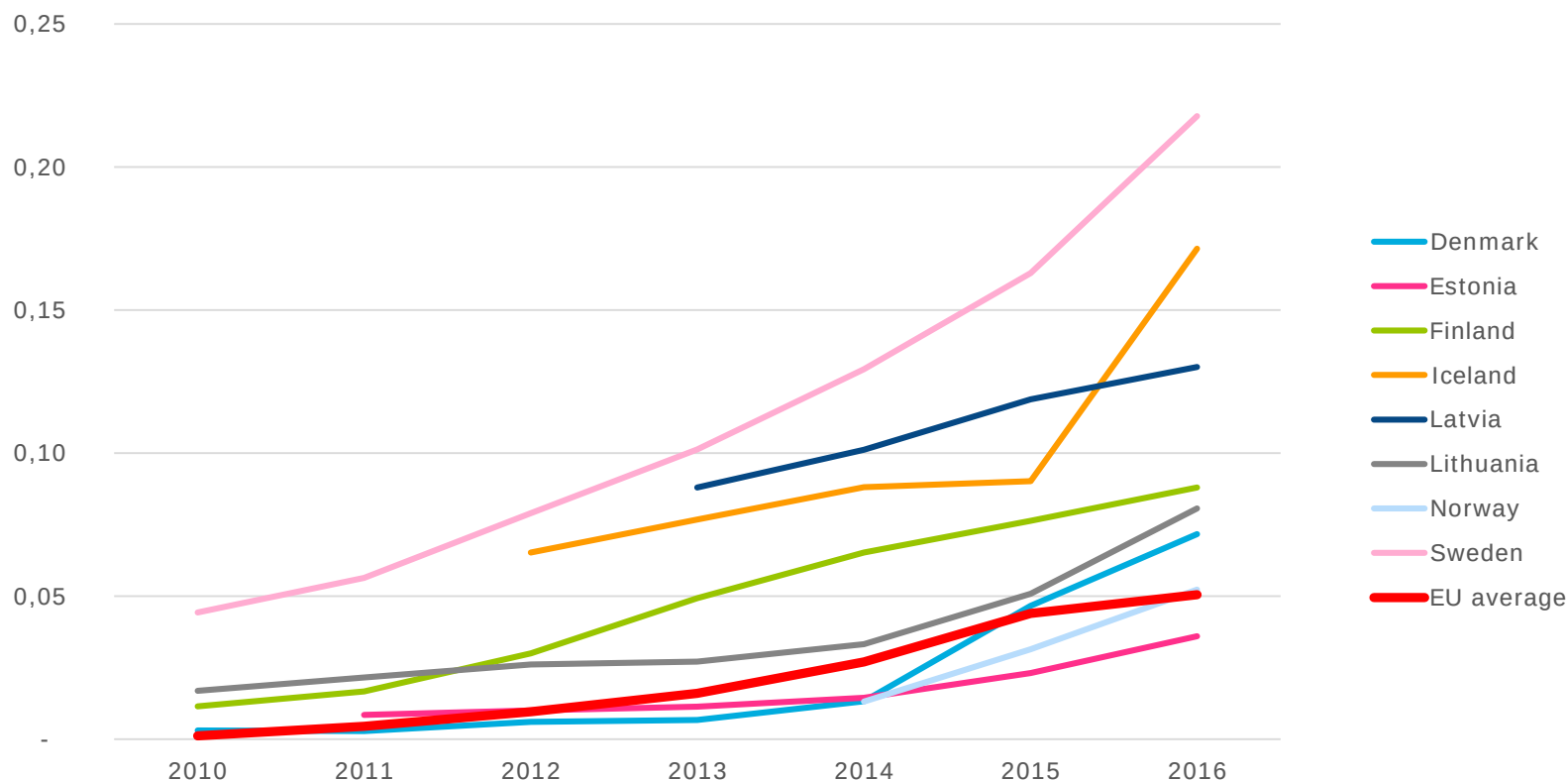
3.5 Fixed broadband subscriptions with a marketed downstream capacity of 30 Mbps or more, per capita

Source for EU is “Broadband indicators - July 2016” and is an average.



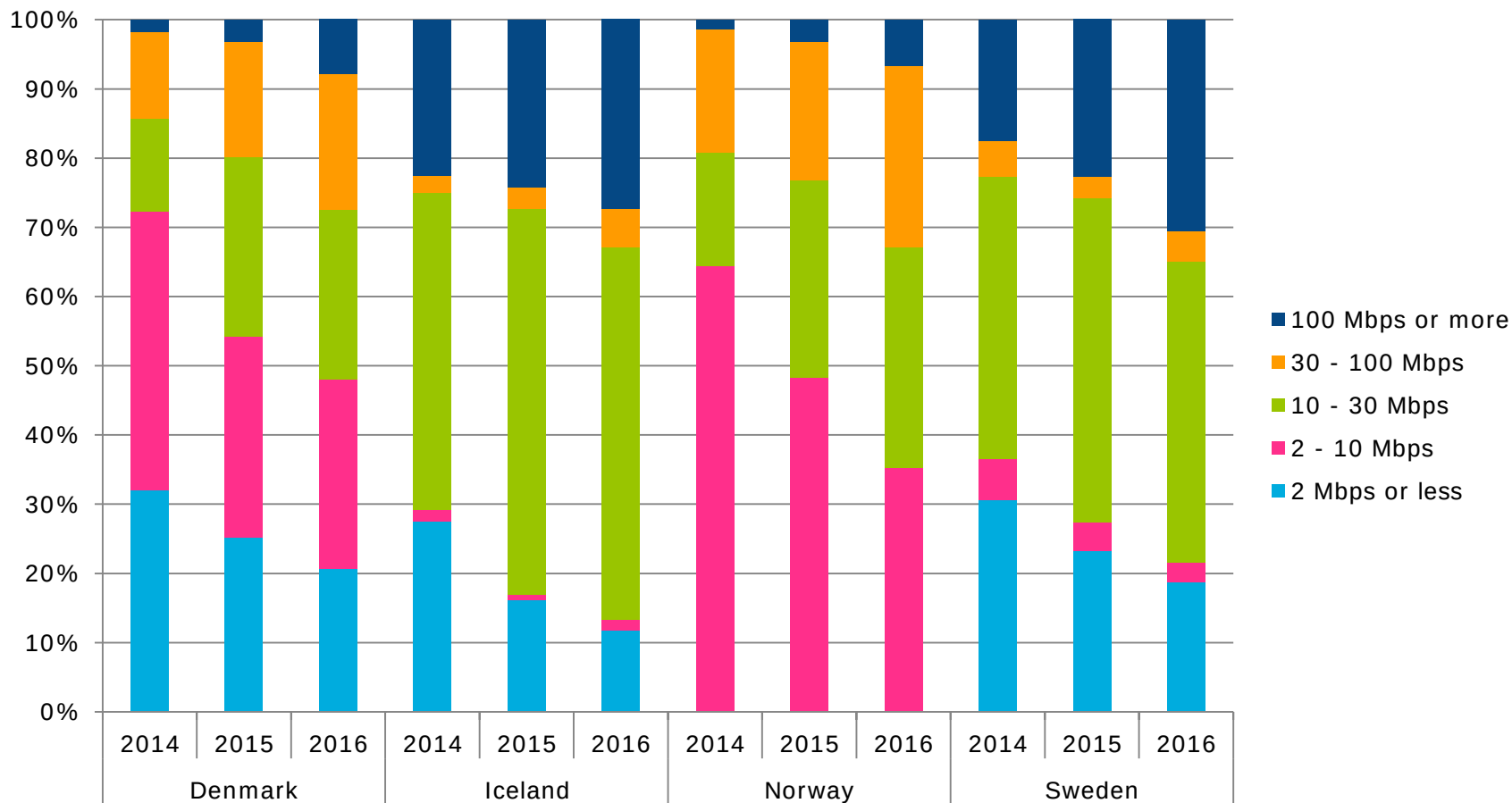
3.6 Fixed broadband subscriptions with a marketed downstream capacity of 100 Mbps or more per capita including EU

Source for EU is “Broadband indicators - July 2016” and is an average.



3.7 Fixed broadband subscriptions by marketed upstream capacity

Norway's segment 2 – 10 Mbps also includes 2 Mbps or less.





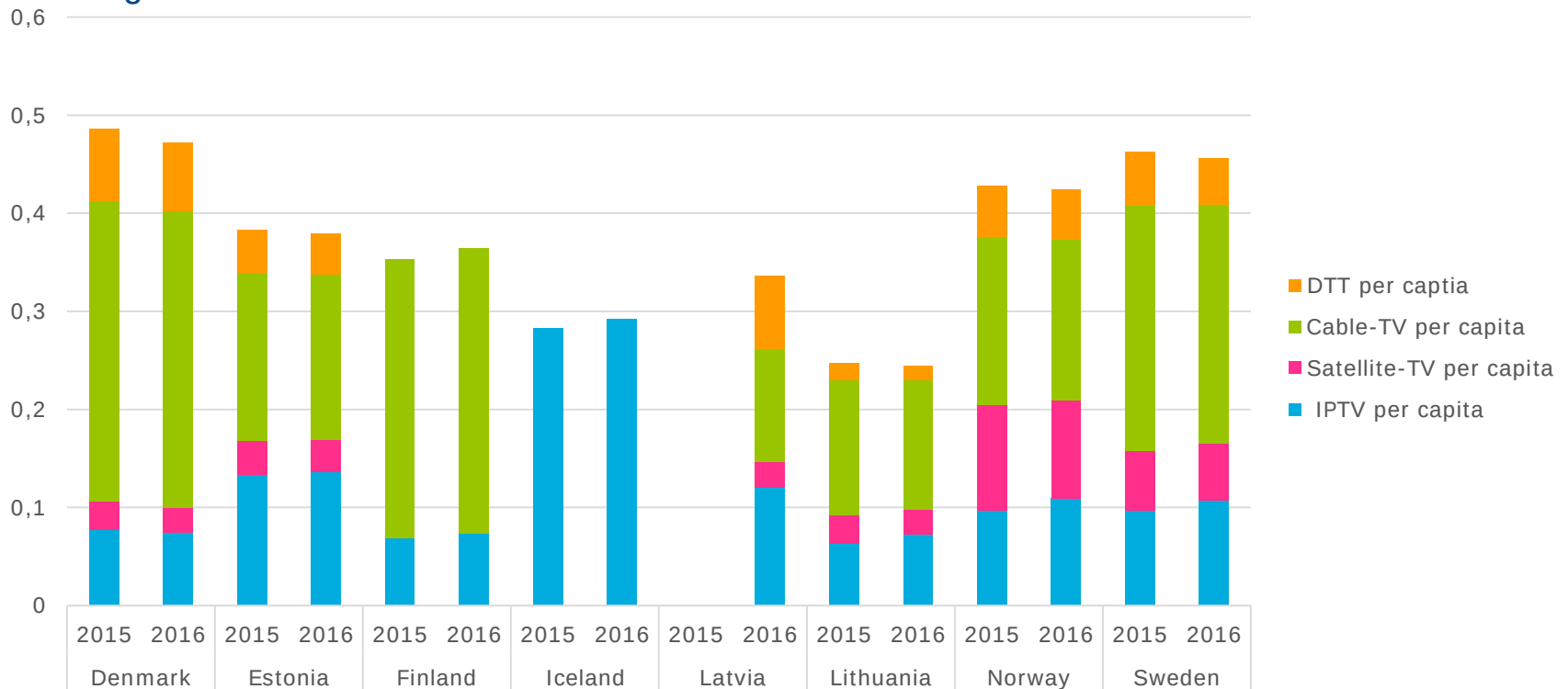
4. TV-services

Traditional pay-TV-services

- The total number of TV subscriptions in all countries were on the same level in 2016 as in the previous year. Latvia has started reporting TV subscriptions.
- Cable TV subscriptions per capita are highest in Denmark and Finland, around 0,3 subscription per capita.
- Satellite TV subscriptions are most common in Norway where, despite continuous decline, the number is still over 0,1 subscription per capita and much higher than in the other countries.
- IPTV is both TV over DSL and TV over fiber. IPTV penetration is highest in Iceland where there is no cable TV. On average, 29 out of 100 Icelanders have an IPTV subscription. In all the other counties, the penetration of IPTV is also growing.
- Digital terrestrial TV penetration is highest in Denmark and Latvia with 0,7 subscription per capita.

4.1 Number of pay-TV subscriptions per capita

In Sweden and Norway only pay-tv is counted in digital terrestrial TV (DTT), in Denmark DTT includes both pay-tv and free to air. IPTV is both TV over DSL and TV over fiber. Data is not available for Latvia in 2015. Data on satellite TV and DTT subscriptions is missing for Finland.

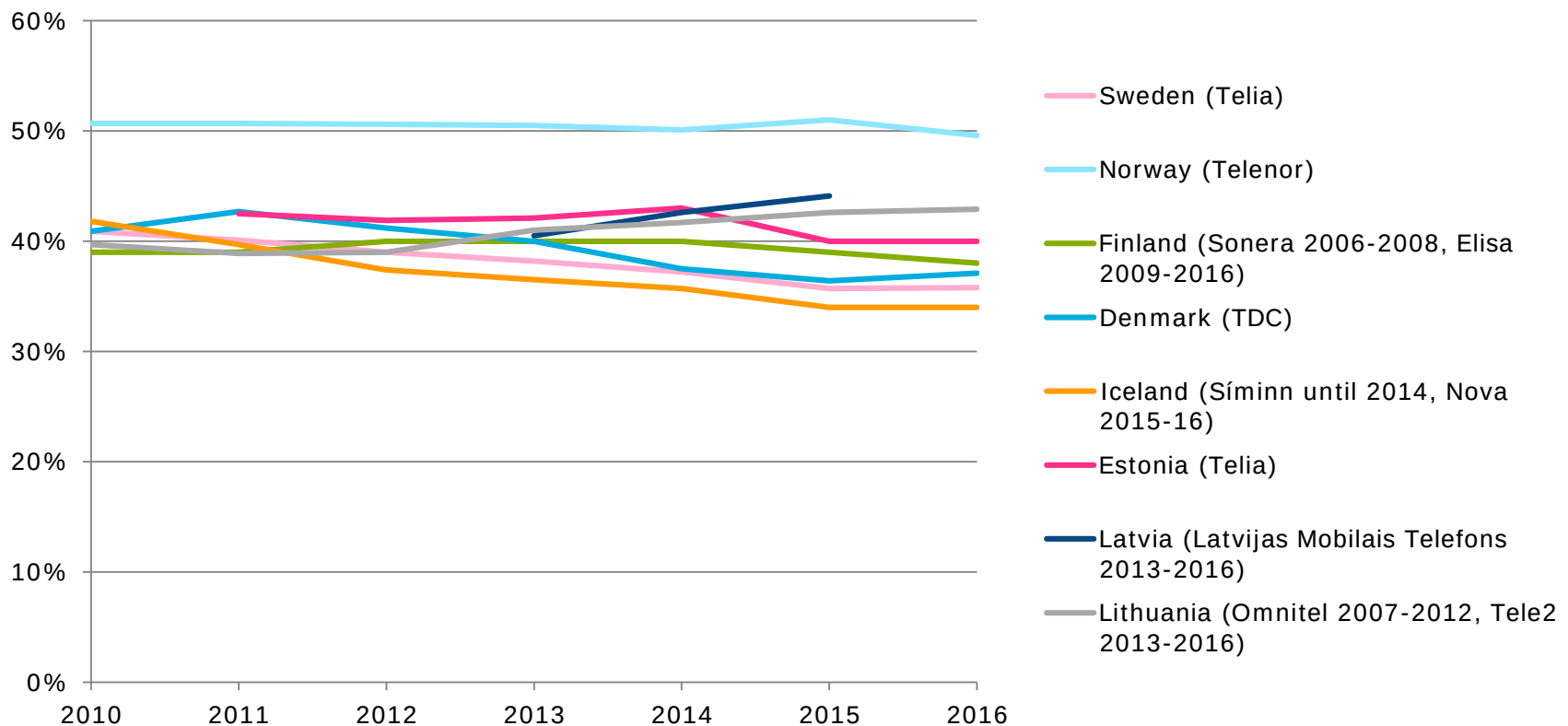




5. Market shares

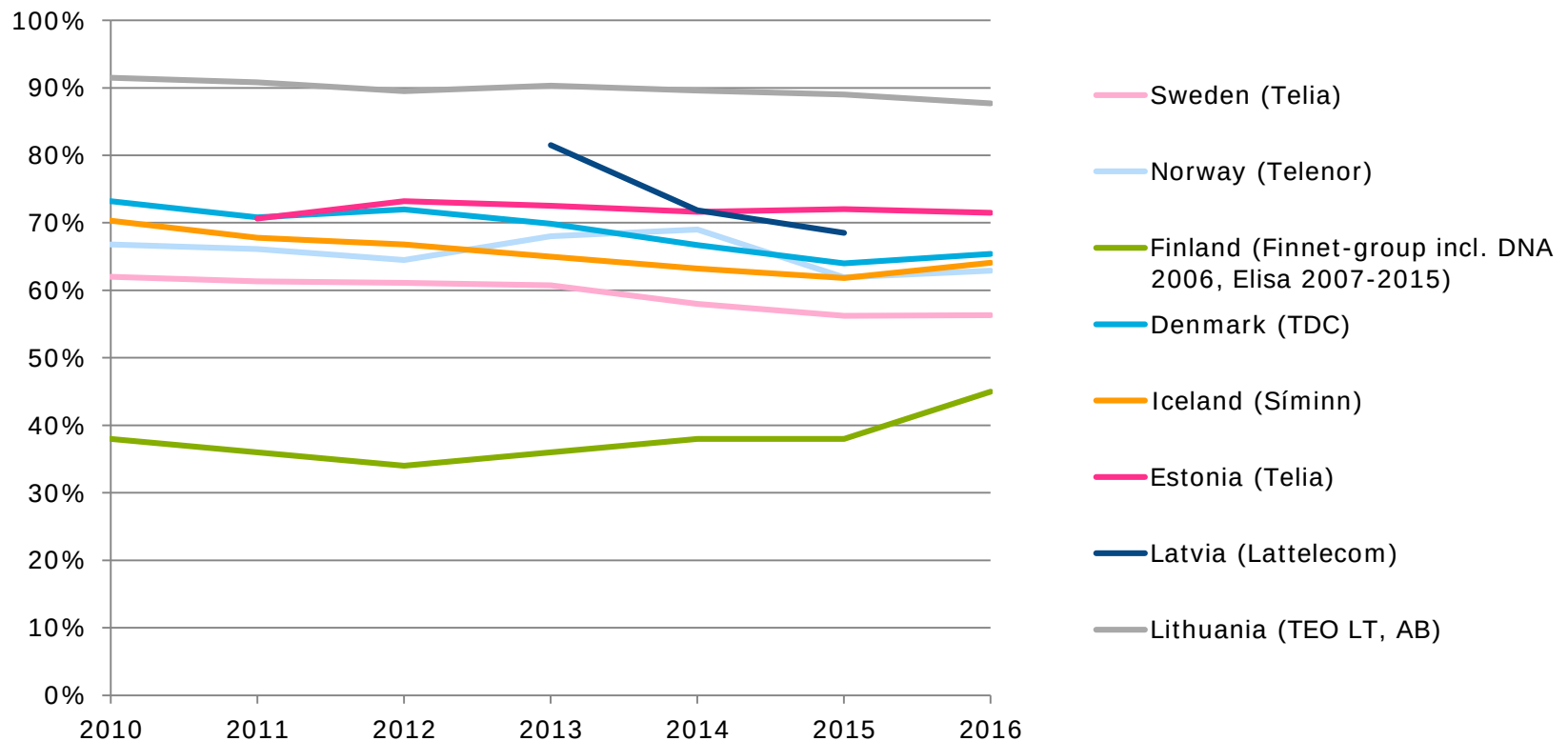
5.1 Market share of leading mobile operator

Operator with the largest market share in the period, based on subscriptions. Market shares include subsidiaries. Mobile subscriptions includes ordinary mobile subscriptions and dedicated data subscriptions. Data for Latvia is not available for 2016.



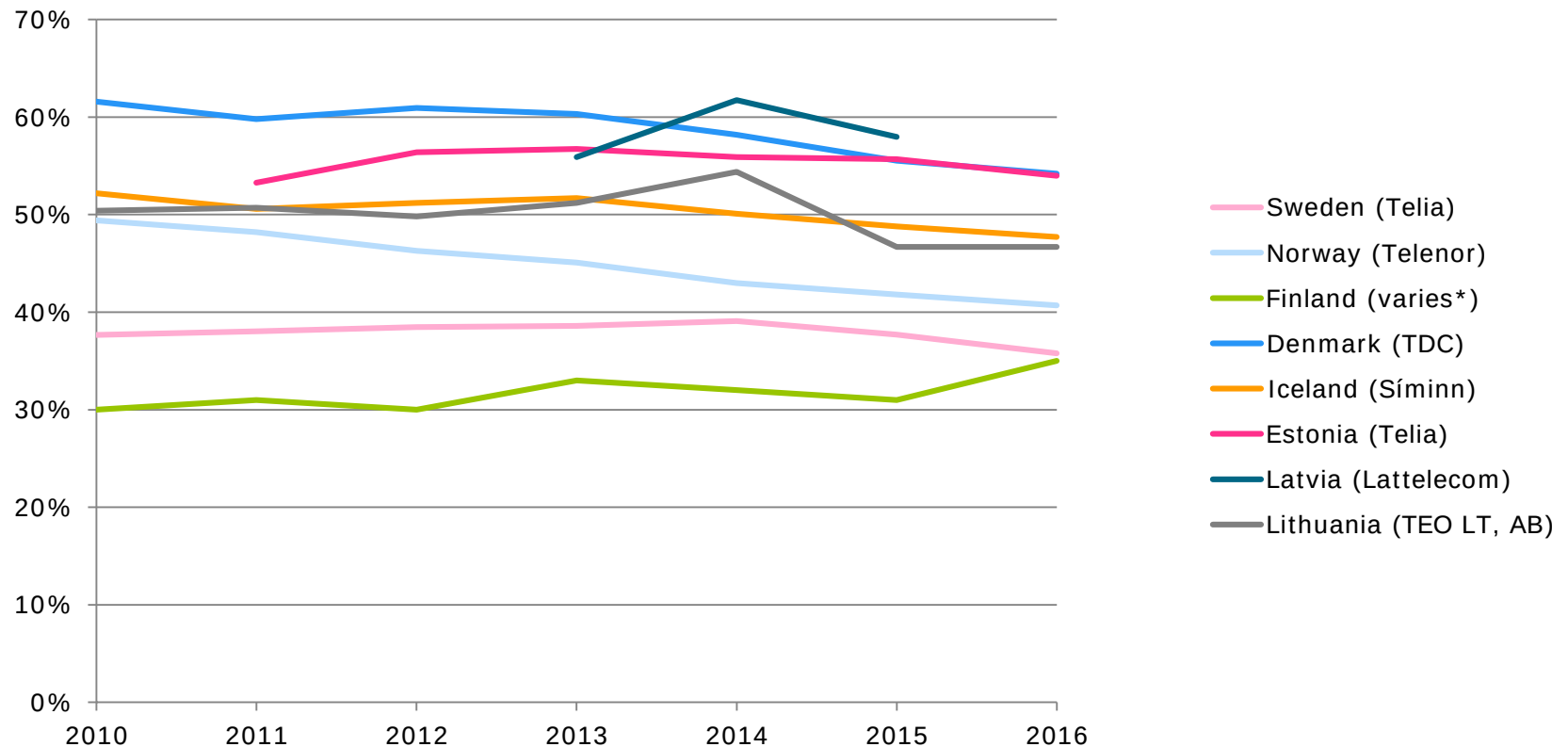
5.2 Market share of leading operator in fixed telephony

Operator with the largest market share, based on subscriptions, in the period,. Market shares include subsidiaries. Fixed telephony subscriptions include PSTN, ISDN and IP telephony subscriptions (managed VoIP).



5.3 Market share of leading operator in fixed broadband services

Operator with the largest market share, based on subscriptions, in the period. Leading operator in Finland: Elisa 2006-2009, 2013 and 2015, 16, Telia Sonera Finland 2010-2011, 2012 and 2014 Telia Sonera Finland and Elisa are even. Market shares for Latvia are not yet available.





6. Investments and revenues

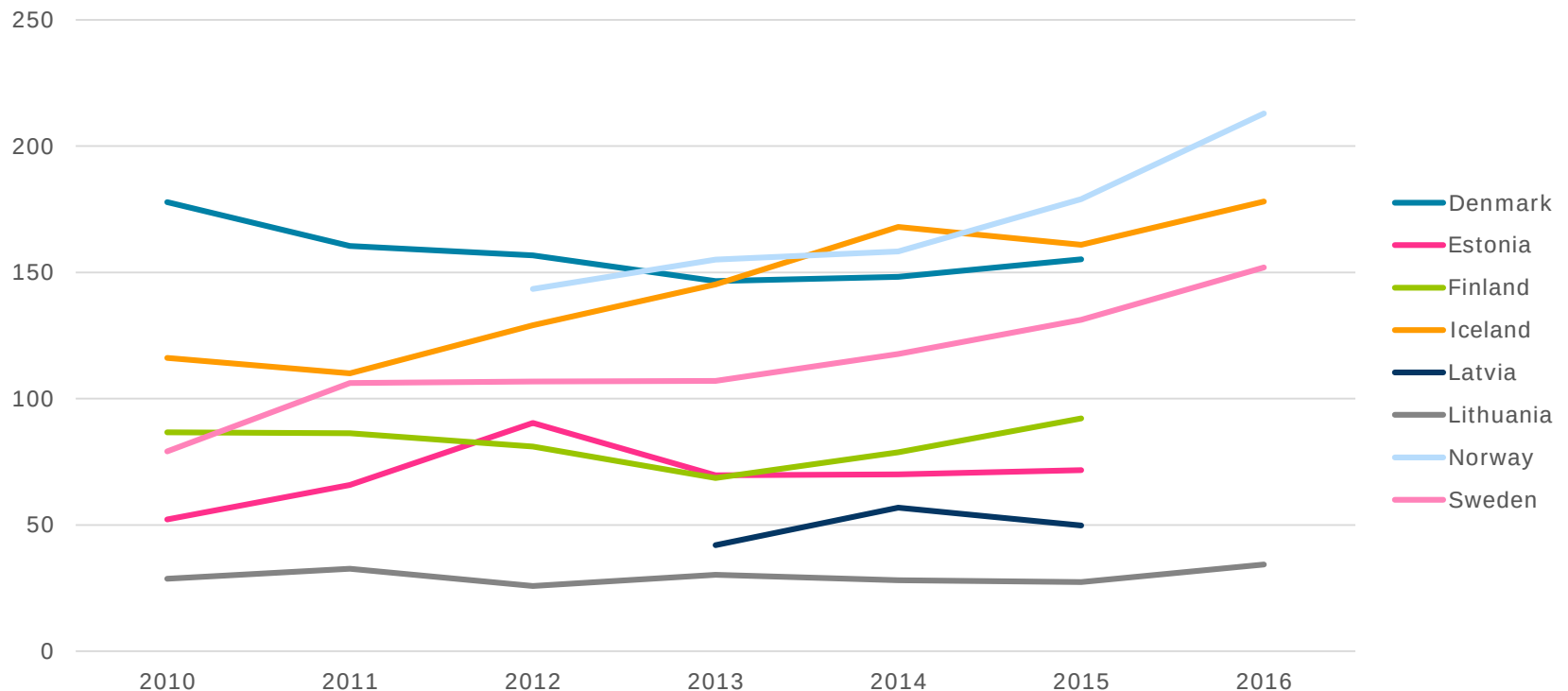
Investments and revenues

- Revenues includes here: mobile call services, fixed call services and broadband services. Revenues from roaming are not included. Revenues are excluding VAT. Revenues from mobile call services, fixed call services and broadband services in euros PPP were between 350 and 550 euros in the Nordic countries and between 100 and 250 euro in the Baltic countries.
- Investments (tangible fixed assets) per capita in 2016 were highest in Norway with 213 euro per capita, followed by Iceland with 178 euro.
- Investments and revenues for 2016 are not yet available for Denmark, Finland and Estonia. Investments are not available for Latvia in 2016.
- Exchange rates and PPP:

Country	Local Currency	1 EURO in LC	Euro PPP
Denmark	DKK	7,46	10,06
Estonia*	EUR	1,00	0,73
Finland	EUR	1,00	1,24
Iceland	ISK	142,37	185,61
Latvia	EUR	1,00	0,67
Lithuania	LTL	1,00	0,60
Norway	NOK	9,58	12,56
Sweden	SEK	9,43	11,99
*Estonia before 2015	LTL	3,45	2,09

6.1 Investments (euros per capita)

Investments in tangible fixed assets. Exchange rates from the European Commission study “Mobile Broadband prices - Prices as of February 2016”.



6.2 Revenues in euros (PPP) per capita

Revenues of mobile call services, fixed call services and broadband services. Revenues from international roaming are not included. Purchasing power parity (PPP) and exchange rate as of 2016 from the study European Commission “Mobile Broadband prices - Prices as of February 2016”.

